

NOTE ON THE AUSTRALIAN GENUS *TAPEIGASTER* MACQ. (DIPTERA)
WITH DESCRIPTIONS OF NEW SPECIES.

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(Communicated by Dr. E. W. Ferguson.)

The Acalyprate genus *Tapeigaster* was described in 1847 by Macquart (*Mem. Soc. Sci. Lille*, 1846, p. 102) as belonging to the *Sciomyzidae*, notwithstanding the presence of a pair of strong vibrissae, well recorded in the original diagnosis. Only one species, *Tap. annulipes*, from New Holland (without precise locality) was described and figured on pl. VI., fig. 1; the type is to be found in Bigot's, now Verrall's, collection. The genus was not recorded subsequently, until in 1917 Prof. Hendel (*Deutsch. entom. Zeitschr.*, 1917, p. 46) described a new genus *Sciomyzoptera*, *incertae sedis*, with a new species *Sciom. annulata* from Australia.

Having received recently from Dr. E. W. Ferguson, of the Health Department, Sydney, rather numerous specimens of flies of the present genus, and comparing them with the descriptions of Macquart and of Hendel, I have come to the conclusion that both genera are synonymous, even their types being, in my opinion, the same species.

Regarding the systematic position of the genus *Tapeigaster* (the better spelling of which is perhaps *Tapigaster*), I think that it may always be placed in the *Scatophagidae*, as a special subfamily between the *Scatophaginae* and the *Noreliinae*.* But the reduced orbital and dorsocentral bristles, the convergent post-vertical bristles, the entire costa** and the spinose femora are very peculiar. The shape of proboscis seems to be very like that of *Scatophaga*, the genus belonging thus to the Thecostomata.†

The genus may be characterised as follows:—

TAPEIGASTER Macquart, 1847. (*Sciomyzoptera* Hendel, 1917.)

Shining reddish or yellowish species of middle or great size, with unspotted wings, with thickened and spinose femora and with greatly developed male genitalia.

Head rounded, as broad as the thorax, rather convex behind, with the occiput swollen below. Frons flattened, or even a little concave, not prominent in profile, with parallel sides. Vertical plates short. Ocelli at vertex, on a rather prominent tubercle. Face short and concave; mouth border more or less prominent, with a strong vibrissa on each side. Para-facialia linear; peristomialia rather broad, as broad as the third antennal joint, or a little more. Eyes bare, rounded. Lamula not or less visible from above, appearing as a prominent tubercle between the base of antennae, which are therefore distinctly separated at root. Antennae inclined, inserted near the middle of eyes, short, extending or not to the mouth border, with the third joint rounded at end or quite circular; arista long, bare or shortly pubescent. Mouth opening broad; praelabrum concealed, but well developed. Palpi not dilated, never flattened, destitute of terminal bristle; proboscis rather elongated, chitinous, with short terminal flaps.

Cephalic chaetotaxy well developed; postvertical as a rule convergent or even decussate; 2 vertical of about the same length; a few occipital; 1 ocellar; 2 short superior orbital; no inferior orbital, but the frontal stripe above the antennae with some bristles, directed inwardly.

*Hendel, *Deutsch. entom. Zeitschr.*, 1917, p. 35-36.

**Hendel, *Entom. Mitteil.*, v., 1916, p. 296-299.

†Frey, *R. Acta. Soc. Fauna and Fl. Fenn.*, 48, 1921, p. 209.

Mesonotum elongate, with the suture broadly interrupted in the middle; hypopleura prominent; mesopleura bare.

Thorax chaetotaxy as follows:—1 humeral; 1 praesutural; 2 notopleural; 1 anterior and 2 posterior supra alar; 1 presentellar; 2 dorsocentral; 0 pteropleural; 0 mesopleural; 1 sternopleural placed in the middle of the upper border of sternopleura.

Scutellum bluntly triangular, convex, rather bare on the disc, with four marginal bristles.

Abdomen short, not longer and not broader than the thorax, with five visible segments; no distinct bristles. Male genitalia very greatly developed, sometimes tuberculate below; female ovipositor retractile, with two terminal lamellae.

Legs strong and hairy; femora thickened, with strong but short spines below, placed in two rows on terminal half; tibiae not spinose, with distinct praepical bristle.

Wings elongate, with bare and shining membrane. Costa bare, with no costal bristle and without basal interruption. Subcostal vein well developed and complete; first longitudinal vein bare; last portions of third and fourth vein parallel or slightly converging; hind cross vein straight and near the hind border; second basal cell normal; anal cell shorter than the second basal cell, obtuse or a little acute below but never produced; sixth vein not extended to the hind border or with a spurious prolongation only; axillary lobe broad; axillary vein broad, but spurions; alula rounded and large.

Type: Tapeigaster annulipes Macq., 1847.

Nothing is known about the habits of the adults, or about the first stages; it is probable that some species, like *annulipes*, breed on fungi, as is to be seen from labels on the specimens. The most robust species looks very like the European species of *Neurotena*, and seems to be likewise confined to mountainous districts.

It is possible that some species described by old writers from Australia under the generic name *Dryomyza* may belong here. Thus *appula* Walker (List p. 984), of which, however, is said that the sides of face are without bristles; *bicolor* Walker (Ins. Saund. iv., p. 370) from N.S.W., which has a very different coloration; and certainly *cingulipes* Walker 1857, also from N.S.W.

The four species before me may be distinguished as follows:—

- 1 (6). Upper mouth border not much prominent and not bi-tuberculate in the middle; head without silvery spots near the eyes; abdomen entirely reddish; tibiae yellowish with black rings, hind cross vein less oblique.
- 2 (5). Antennae and proboscis black; wings greyish hyaline or very faintly yellowish.
- 3 (4). Frons with whitish stripes at sides near the eyes; postvertical crossed at end; back of mesonotum opaque greyish with distinct dark and whitish stripes; abdomen with distinct whitish hind border to the segments; legs grey dusted with no distinct black rings or with less developed ones; femora with strong bristles above, those of the hind pair more thickened than those of the middle; male genitalia not tuberculate below; wings quite hyaline. *marginifrons*, n.sp.
- 4 (3). Frons destitute of whitish lateral stripes, with only a very narrow white line in front near the eyes; postvertical parallel; back of mesonotum shining reddish with a single whitish longitudinal stripe in the

- middle; abdomen entirely shining reddish, without whitish bands; legs shining yellowish, with black rings on femora and tibiae; femora without strong bristles above, those of the middle pair more thickened than the hind ones; male genitalia with two very prominent tubercles below at end; wings distinctly a little yellowish. *annulipes*, Macq.
- 5 (2). Antennae and proboscis reddish yellow; frons without white borders; abdomen entirely shining reddish; legs shining reddish, with less marked black rings; all the femora destitute of rows of strong bristles above, those of the middle pair more thickened than the hind ones; male genitalia bilobate at end, but without strong tubercles; wings intensively yellowish. *luteipennis*, n.sp.
- 6 (1). Upper mouth border very prominent and with two strong tubercles in the middle; head with silvery spots near the eyes and on the occiput; abdomen shining black in the middle; hind femora more thickened than the middle ones; tibiae black with a yellow ring in the middle; male genitalia spheroidal, with no prominent tubercles below; wings yellowish, with the hind cross vein inwardly oblique. *argyrosbila*, n.sp.

1. *Tapeigaster marginifrons*, n.sp.

Closely allied to the following species, but at once distinguishable by the broad whitish orbits. Type ♂ in the collection of the Health Department, Sydney, with several other specimens of the same sex from the Blue Mountains, March-April, 1922. Type ♀, id. id., from Sydney, 2nd June, 1922. Two ♂ from Kosciusko, New South Wales, 5,000 ft., June and December, 1920-21; one ♂ from Hallet's Cove, South Australia, 9th October, 1920. ♂♀. Length of body and of wing, 6, 5, 7 mm. Occiput reddish above, whitish below, above in the middle with two white shining stripes extended from the neck to the sides of vertex, and there in contact with the white sides of the frons; moreover, the upper eye-border is whitish to the beginning of the occipital bristles. Frons reddish in the basal half and yellowish in the terminal one, with an elongate whitish ocellar triangle, and with complete whitish stripes at sides near the border of the eyes. Lunula shining whitish. Face pale yellowish, like the peristomialia which are broader than the third antennal joint; parafacialia linear, white shining, in continuation of the frontal orbits. Mouth border rather prominent, but simple; palpi pale yellowish; proboscis black. Antennae entirely black, a little shorter than the face; they are rather separated at base, but are approached towards the middle; the third joint is rounded at end, and about as long as the second; arista long, bare. All the cephalic bristles are black; postvertical crossed at end; occipital black, lower part of head with whitish hairs; frontal stripe with short black hairs at sides in front.

Thorax entirely reddish; on the back it is rather opaque, and has a broad, greyish longitudinal middle stripe, extended equally from the neck to the scutellum; in its praesutural portion this stripe is divided by a narrow middle longitudinal line of the ground colour; on the sides there is a broad greyish band extending from the humeri to the root of the wings, just above the notopleural line. Pleurae wholly clothed with a thin light grey dust; they are bare, but the sternopleura are clothed with long whitish hairs, which are more dense on the breast. Scutellum reddish, with faint grey dust and short black pubescence. All the bristles black; the short pubescence of the back of mesonotum is black. Calypters reddish, with a whitish and white fringed border. Halteres whitish, with reddish stalk. Mesophragma reddish, with a faint whitish dust.

Abdomen entirely reddish, rather shining; segments from second to fifth with a greyish hind border, which is dilated in the middle and prolonged forwards; pubescence short and dark on back, long and whitish on sides. Venter reddish, whitish dusted, with scattered white hairs. Male genitalia shining reddish, not at all dusted, with scattered white hairs on terminal portion; the apical segment is a little bilobate, but without prominent tubercles. In the female there are some blackish bristly hairs at hind border of the last segments; ovipositor reddish, white pilose.

Coxae reddish, whitish dusted and with long white hairs; femora reddish, with faint greyish dust, those of the front pair dark grey on the outer side; front femora with a row of black bristles above, and with dense and long white hairs below; middle femora thinner than all the others, with 3-4 long black bristles near the end above and with long white hairs below; hind femora with 3-4 erect black bristles above before the middle and with white hairs below; the spines are black, but they are well developed on the hind pair only. Tibiae yellowish, the anterior ones with black end only, the hind ones with black base and black end; they have long and dense hairs at the inner side. Praeapical bristle, and spur of middle tibiae black. Tarsi with yellowish basal joint, with reddish middle joints (second and third) and with blackish terminal joints; claws stout, black; pulvilli whitish.

Wings quite hyaline, not at all yellowish, with reddish veins. First posterior cell distinctly narrowed at end by a sudden curving below of the end of the third longitudinal vein; second longitudinal vein perfectly straight; small cross vein a little beyond the middle of the discoidal cell; hind cross vein nearly perpendicular.

II. *Tapeigaster annulipes* Macquart.

Tapeigaster annulipes Macquart, *Mem. Soc. Sci. Lille* (1846), 1847, p. 103, pl. vi., fig. 1.

Dryomyza cingulipes Walker, *Trans. Ent. Soc. London* (2), iv., 1857, p. 220.

Sciomyzoptera annulata Hendel, *Deutsche entom. Zeitschr.*, 1917, p. 47.

A characteristic fly, recognisably described and figured by Macquart, chiefly on account of the greatly developed male genitalia. Macquart's figure shows the broad white orbits peculiar to the preceding species; but this seems to be an erroneous exaggeration of the fine white line of the anterior part, the genitalia (fig. 1c and 1d) referring without any doubt to the present species.

Some specimens of both sexes from the Blue Mountains, 13th April, 1922; other specimens from Mosman, 26th May, 1917, "settled on *Psalliota campestris*," also from Milson I. (Hawkesbury River), May, 1915, "on fungus"; and from Sydney, without data.

♂♀. Lengths of the body and of the wing 7-8 mm. Occiput reddish, with a faint grey dust, shining only in the postvertical region, clothed with scattered erect black hairs, without silvery spots. Frons rectangular, longer than broad, of a deep purplish-red colour, more intensive on sides, chiefly in the male; ocellar spot triangular, blackish, margined with grey; orbital white lines very narrow, and visible only near the antennae; it is clothed with dark hairs and has some black bristles in front above the antennae. Face yellowish; parafacialia linear; peristomialia as broad as the third antennal joint, whitish, unspotted; mouth border less prominent and simple. Lunula triangular, whitish, visible between the roots of the antennae, which are entirely black like the arista, and are extended to the mouth border. Palpi pale yellowish or whitish; proboscis black. All the cephalic bristles black; postvertical parallel or convergent; occiput below with whitish hairs.

Thorax entirely reddish; on the back it is darker and rather shining with a broad, equal, complete middle grey stripe, extended from the neck to the scutellum; another broad but less determined stripe on the sides, just above the notopleural line, extended from the humeri to the postalar calli. Pubescence black, rather long, erect, scattered. Pleura with light grey dust, entirely opaque and bare, except on the sternopleura, which are clothed with dense and long pale hairs. Mesopbragma likewise dusted, but shining. Scutellum like back of mesonotum, shining, dusted at base only. All the bristles black. Calypters vitreous, with yellowish border, fringed with white hairs. Halteres whitish.

Abdomen shining reddish, almost without dust, with dark pubescence and longer dark hairs at sides; middle segments with the hind border narrowly black, but not always distinctly. Ventral membrane soft and dirty whitish; tergites reddish yellow, those of the male with long whitish hairs. Male genitalia greatly developed and very prominent; the apical segment with two long tubercles, directed below, one on each side; they are shining reddish yellow, clothed with long dark hairs. Ovipositor shining reddish, with the extreme end and the terminal lamellae black.

Legs shining reddish yellow, with black spots on femora and with two black rings on the tibiae; the four posterior femora have, moreover, a short black ring at end; front and middle femora thickened, more strongly in the male; tarsi blackened at end. The hairs of femora are black above and pale below; all the femora are armed with strong black spines below on the terminal half.

Wings as described for the preceding species, but distinctly yellowish at stigma and in the fore half; first posterior cell proportionally broader and not distinctly narrowed towards the end.

III. *Tapeigaster luteipennis*, n.sp.

Nearly allied to the preceding species, but of greater size and more robust, with quite yellowish antennae and proboscis, and with differently shaped male genitalia.

Type ♂, a single specimen in the Health Department collection, Sydney, from Eccleston, New South Wales, 1st March, 1922.

♂. Length of body and wing about 10 mm. Head, its appendages and chaetotaxy as described for the preceding species; postvertical parallel.

Antennae distinctly shorter, ending at a considerable distance before the mouth border; they are entirely yellowish, the rounded hind joint being even more pale; arista with distinctly longer pubescence. Proboscis entirely pale yellowish.

Thorax broad and strong, dark reddish, entirely opaque; humeri and notopleural line paler; on middle of the back there is a praesutural whitish stripe, which is divided by a broad middle line of the ground colour. Pubescence blackish, shorter but denser than in the preceding species. Pleurae with some darker and some paler portions, bare, the sternopleura only being clothed with long pale hairs. Scutellum lighter reddish than the back, shining, with short black pubescence; mesopbragma of the same colour; shining, not dusted. All the bristles black. Calypters and halteres as in the preceding.

Abdomen entirely shining reddish, without black hind borders of the segments; its pubescence is short and black, but the longer hairs of the sides are reddish; sternites with long whitish hairs. Male genitalia greatly developed, shining reddish, with long hairs of the same colour; in general shape they are as in the preceding species, but the terminal segment with only two short, obtuse, rounded tubercles; moreover, the last abdominal tergite has a strong prominence on each side, before the genitalia.

Legs shining reddish, with less developed black markings; all the femora with a more or less complete middle dark spot, and the four posterior ones with a small black, not ring-shaped, spot at end; the tibiae with only the apical ring-like spot, the basal one being not distinguishable. Tarsi pale yellowish, with only the last joint black. The four anterior femora are greatly thickened, those of the hind pair much less thickened; the hairs are dark above and reddish below, and there are no distinct rows of differentiated bristly hairs above; the strong spines are black, developed on all the pairs, but longer on the four anterior ones.

Wings very intensively yellowish, only a narrow posterior border being greyish hyaline; stigma more reddish. All the veins reddish, directed as in the preceding species; first posterior cell but little and gradually narrowed at end.

IV. *Tapeigaster argyrosyla*, n.sp.

The most robust of all the species here differentiated, and very distinct from all the others on account of the silvery spots of head and of the peculiar shape of the mouth border.

Type ♂, a single specimen in the Health Department collection, Sydney, from the Blue Mountains, 11th March, 1922. ♂. Length of the body 10 mm.; of the wing 9 mm.

Occiput reddish, rather shining above, with an elongate argenteous spot in the middle, extended from the neck to the postvertical; at the eye-border there are five argenteous spots on each side, two lower ones of greater size, and three superior smaller, the internal of which is placed on the frons at the upper corner of the eyes; it is clothed with scattered blackish hairs on upper half, and with denser yellowish ones below. Frons quadrate, as long as broad, distinctly concave, the ocellar tubercle being thus rather prominent; it is of a deep purplish colour, with a triangular argenteous spot at vertex, in which is the blackish ocellar area, and with an elongate argenteous spot on each side in the middle near the eyes; the white shining lunula is visible from above between the roots of antennae. Face concave, with a not sharp but distinct middle keel, and with the upper mouth border very prominent and strongly bituberculate in the middle. Parafacialia linear; peristomialia broad, deep purplish, bare, about as broad as the length of the third antennal joint; along the eyes there is a narrow argenteous line. Antennae considerably shorter than the face; third joint only a little longer than the second, of circular shape; they are entirely reddish, the third joint being, moreover, whitish dusted; arista broken off in case of type specimen. Palpi yellowish, with some long blackish hairs at end; proboscis reddish. All the cephalic bristles black; postvertical decussate.

Thorax entirely reddish; on the back it is clothed with a rather dense dark yellowish dust, becoming opaque; on the sides and pleura it is without dust, being, therefore, rather shining; longitudinal stripes not distinct, although the yellowish dust seems to form a broad middle band; above the humeri, along the notopleural line and above the root of wings there are some not well determined white shining spots; the short pubescence of the back is black, like all the bristles. The pleura are bare, except the long whitish hairs of sternopleura, longer, denser and yellowish on the breast; propleura and front part of mesopleura with broad white shining spots. Scutellum shining reddish-yellow, with short black pubescence and some whitish dust at extreme base. Mesophragma shining reddish. Calypters yellowish, with yellow fringe. Halteres pale yellowish.

Abdomen shining black, with reddish base and pale yellowish terminal segment; the pubescence is black, but the longer hairs of the sides are reddish. The

greatly developed genitalia are pale yellowish, shining; they are clothed with long yellowish hairs on the sides and below; the basal segment is as long as the terminal abdominal segment; the apical segment is rounded, without any prominent tubercle.

Legs stout and short, with greatly thickened front and hind femora, those of the middle pair being the least thickened of all. Coxae reddish. Femora shining reddish, those of front pair with a broad black patch from the middle outwards; they have long whitish or yellowish hairs below, and blackish hairs and bristles above; on the terminal part there is below a short black denticulation, but as it seems there are a few spines on the hind pair only. All the tibiae black, with a more or less broad yellowish ring just beyond the middle; they are clothed with long and dense dark hairs inwards, chiefly those of the middle pair. All the tarsi whitish, shorter than the tibiae.

Wings shorter than the body, intensively yellowish on the anterior half; veins reddish, brighter towards the base. Third and fourth longitudinal veins distinctly and equally convergent at end, the first posterior cell being thus gradually narrowed at end. Hind cross vein straight, placed inwardly oblique, the upper outer angle of the discoidal cell therefore acute. Lower angle of the anal cell distinctly acute, even if not produced.

Note: The types of the new species described in the above paper have been presented to the Australian Museum, Sydney.—E.W.F.